

BAY AREA ATARI* USERS GROUP

August 1981

NEWSLETTER

Issue 11

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More Machine Language

Paul Conrad

A few issues ago I gave you a little bit of information about using machine language routines with your BASIC programs. A lot of people have been asking for more, so let's cover a couple of the next items to be considered when preparing these routines.

Let's first look at some of the storage locations which may be used by our routines, and then at how our machine language code might begin.

There are two kinds of storage locations which are important to you. One of these is the location where your code will be stored. This may be in a string in your program or somewhere else in storage. The most likely places to stick your program are in page 6, which starts at location 1536, or in free storage just below your graphics display list area. The second type of storage you are especially interested in is page 0 storage. These are storage locations from zero to 255. These are important because there are special machine language instructions which use page 0 locations, together with the X & Y registers for quick and easy addressing of storage.

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0398 nights.

Part of page 0 is reserved for the operating system and documented in the Atari hardware and operating system manuals. Most of the rest of page zero is turned over to BASIC for its use. Unfortunately, storage maps of how BASIC uses page zero have not been made available. Positions 212 and 213 are where your routine should place a value that is to go back to your BASIC program. If you invoked the program with a statement like `X = USR(1536,A)`, then The contents of `212 + 213*256` will be placed into X at the end of the routine.

I have found that using positions 203-204, 207-208, and 209 do not seem to upset BASIC. However, I have not written any code that expects these values to remain useable between uses of the machine code. If anyone out there can come up with better info on the use of page zero please let me know.

Most machine language programs will start with a series of instructions like the following!

```
PLA
PLA
STA 204
PLA
STA 203
PLA
STA 208
PLA
STA 207
```

Let's take a look at what is going on is those instructions. The first PLA pulls from the stack the top value. That value is the number of parameters or values which have been placed into the stack after itself. In this example two values are later pulled out, one byte at a time.
continued on page 7...

EDITORIAL

COMPUTERTOWN by Liza Loop

What is ComputerTown? ComputerTown is people teaching people to become informed citizens of today's information society. It is kids developing an intuitive understanding of computer technology through recreational games and educational simulations running on microcomputers. It is adults sharing their knowledge of computer tools with their neighbors. ComputerTown is an chance for everyone in town to become "Computer Literate".

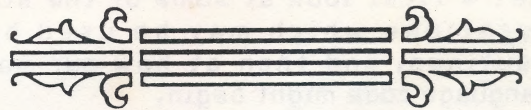
Where is ComputerTown?
ComputerTown is in your town, at the library, the recreation center, the park, and the Senior Center. It is a grassroots phenomenon which grows out of your community's need to keep up with the technology of the 20th century. It is "informal education". You set up a computer where people can touch it and ask questions and ComputerTown is there.

Who runs ComputerTown? You do. It takes all kinds to run a town - people who can organize and administer, people to pick up the mess after the crowd has gone home, technical experts, fund-raisers, playground monitors. You don't have to know how to program a computer to be a big wheel in ComputerTown, you just have to want to contribute to making yourself and your neighbors more comfortable with computer technology.

Are there any ComputerTowns yet? Yes. Several, and each one is different. ComputerTown - Menlo Park, centered in the public library, has been helping kids and grownups become computer literate since 1979. There is a ComputerTown in Oregon, one in Oklahoma, several in the United Kingdom, and many projects around the United States which share the spirit, if not the name, of ComputerTown.

But what about ComputerTown USA! At the present time, ComputerTown USA! is a nationwide dissemination project funded by the National Science Foundation. Its job is to help new, local ComputerTowns start by providing support in three forms: a periodical called ComputerTown, USA! News Bulletin; an "Implementation Package" containing information on how to start and manage a successful ComputerTown; and a series of outlines for self-teaching courses appropriate for use in ComputerTowns. You can subscribe to the News Bulletin by writing to ComputerTown USA!, Box E, Menlo Park, CA 94025.

Is there a role for ComputerTown USA! in the future? The National Science Foundation grant funds will end in September, 1983. But local ComputerTowns may want to form a national and perhaps a global association to continue to serve as a communication link between local projects. Please write for more information.



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Please submit articles camera ready, typed or printed in ~~3~~ 3 1/2 columns. Mail to "EDITOR" at the correspondence address.

Subscriptions (which include Group membership) are \$12 per year and entitle you to 12 newsletters. Single newsletters are \$1.

PROBLEM HOTLINE

EVENING	CONTACT	PHONE NUMBER	SPECIALITY
Monday	Robin Ziegler	(408) 438-6879	Graphics
Tuesday	Chris McAfee	(408) 258-8442	Hardware
Wednesday	John Crane	(408) 268-7317	BASIC & Forth
Thursday	Paul Conrad	(408) 226-7676	BASIC
Friday	Skip Inskeep	(408) 251-5517	Forth
Saturday	Bob Burkhalter	(415) 856-1893	Disc I/O
Sunday	Hans Hansen	(415) 490-0175	DOS I & II

Please Restrict your calls to between the hours of 7:00 to 9:00 p.m. on the day the contact is on duty. This is experimental and subject to change or cancelation. If you have any questions about the operations, call either the assigned contact or Mark Spencer at (415) 965-9355.

NOTE: All the typing here was
done on 'WRITER'.
by
Jerry Falkenhan

WRITER

```

10 DIM A$(900),B$(3),XC$(39),LINE$(41),C
$(24):POKE 82,0:POKE 83,39:POKE 752,1
20 OPEN #3,4,0,"S.:"
30 C$="0-----1-----2-----"
40 LINE$=">0|||||1|||||12|||||
3|||||14"
45 POSITION 0,0: ? LINE$
50 FOR X=1 TO 22:POSITION 0,X: ? C$(X,X):
NEXT X
60 POKE 752,0
70 POSITION 0,1:INPUT A$:L=PEEK(84):POKE
752,1
80 NUM=L-1
100 FOR Y=1 TO NUM
110 POSITION 1,Y
120 FOR X=1 TO 39
130 GET #3,XC
140 XC$(X,X)=CHR$(XC)
150 NEXT X
160 LPRINT XC$
170 NEXT Y:XC$="":GOTO 45

```

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SOFTWARE REVIEW

by
Dave Flory

Before I progress into the reviews I want to say that the opinions expressed here are mine and noone else's so if I get someone mad, get mad at just me.

I recently purchased "CONFLICT 2500" by Avalon Hill @ a discounted \$11 price. Even at that price I consider it a rip-off. If you are a board wargame nut you might enjoy it as you will be used to sessions that take many minutes between moves, but as a computer game nut I find any game that takes as long as this one to make a move terminally boring. The only program which I have that is slower is Dynacomp's VALDEZ tanker simulation (more on that later). The games advertising is excellent but the "graphics" are practically nonexistent and make no use of Atari capability. Commands are cumbersome and poorly explained and the enemy you are fighting is usually invisible, which makes strategy difficult. I might be willing to put up with the rest if it weren't so infernally slow. If anyone wants to see the game without buying contact me and I'll give it to you. I haven't even backed it up.

More on the other slow program. I found it interesting inspite of its very slow operation because I am interested in boats and the ocean and was fascinated to see how cumbersome and massive the oil tanker really is. It takes around 10 miles and 30 minutes of time to stop it from a speed of 18 knots at maximum reverse power. If you are ever on the sea near a large tanker such as is simulated in VALDEZ stay the heck OUT OF ITS WAY. It was somewhat interesting to me to try and steer this behemoth in and out of some of the fiord on the coastline. I will admit that it is extremely frustrating to spend 45 min of actual time navigating the simulation thru' the Valdez Strait only to crash another tanker and sink. Still a better value than the other contender for 'slow champ'.

Now some software I can say some good things about. In general the stuff from Adventure International is fine material. It is common knowledge and is acknowledged by AI that there are hard times in store for people loading the adventures from cassette. It can be nothing short of maddening to have the tape load for 19 minutes before giving an error and "bombing" but even with this difficulty I have found the "Adventure" programs by Scott Adams to be entertaining and worth the price in entertainment value. If you do manage to load one on disk then they're a joy. I have only three and the last one loaded the first try. Other programs by AI that I have used are "Mountain Shoot", & "Deflection", & "Golf". At first look these might seem rather trivial but they are all implemented well and all three seem dangerously addictive if you start playing them. "Deflection" in particular has very strong addictive quality.

Venturing into a more sophisticated area, QS Forth, even as a complete novice in the area, I can see that it is a very powerful programming tool. We've had several presentations on FORTH by different people at group meetings but I am sure that some of us had the same feeling I had, "well sure he's showing us some great things, but he's an expert, I could never do that stuff." I can't do it yet either, but I can see that I will be able to with some practice and not so far in the future either. The documentation provided in the QS FORTH package is so superior to the documentation of most software I've purchased as to put it in completely separate class. The only programs I've seen that begin to match it in this area are the IRIDIS packages which have been reviewed in all the magazines and the Seebree's 3D graphics package. This later has some problems but the listing of programs that come with it is quite educational in many areas. Another program package which has complete listing of the programs with some good sub-routines is the "Atari Safari" package. The Iridis programs are the only ones to come close to the FORTH package in completeness of documentation as they include "hacker" tips and stuff that really isn't in the program, just is interesting and useful to users.

AVATAR SOFTWARE

NEW - SUPER SOFTWARE!

RPN CALCULATOR SIMULATOR

by John Crane
(16K Tape/Disk) \$19.95/\$22.95

THIS IS A TUTORIAL THAT HAS YET TO BE BEAT!

Emulates the functions of an *HP-RPN Scientific Calculator and displays the registers as the operations take place. Program shows the stack, status of the 20 memory registers, commands, and the input. System commands, Stack operations, Math and Stat Functions are implemented.

PERSONAL QUICK EDITOR

AVATAR STAFF
(32K Disk) \$24.95

THIS IS A REAL WINNER!

Written in BASIC and MACHINE LANGUAGE code, this program can input, change, print, format, save and retrieve text data. The program scrolls the text forward or reverse, finds and allows for insertions and deletions of text. Text can easily be formatted during initial input or after it has been saved on disk.

ZOGAR

by Pasquale Barratta
(16K Tape/Disk) \$9.95/\$12.95

A fast paced action game. As Corporal in the National Space Guard, you must search throughout the galaxy for the dreaded, dangerous Zogar, who has escaped. You must bring him back alive!

HOME MANAGER

by Jerry Falkenhan
(32K RAM Disk) \$50.00

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Cash Flow is a total package in itself, and is also a module that fits into the **HOME MANAGER** package. As these modules become available, they can be purchased and put into the binder indexes that are already provided. You can tailor our package to your own personal needs. **CASH FLOW** comes in a handsome, 3-ring binder with documentation.

If some of these names look familiar, you're right! We're a new company with advertising already established in COMPUTE (June - August) and A.N.A.L.O.G. (July/August). If you're a software programmer with innovative ideas and would like to become an author with AVATAR, call or write for information for our terms and software agreement.

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NATIONAL PERSONAL COMPUTING GROUP

SIGPC (the Special Interest Group on Personal Computing of the Association for Computing Machinery) is an "open membership" educational society of people interested in PERSONAL COMPUTING. "Open membership" means anyone is welcome to join -- including computer hobbyists whom no one could possibly consider "professional" (even after they get rich). Of course, there are also a few true "computing professionals" among the ranks.

SIGPC is one of many Special Interest Groups within the Association for Computing Machinery. At last count there were 32 SIGs with a total of 92,283 memberships (fewer members because many people belong to more than one SIG). Each SIG is a national organization with many similarities to SIGPC. Since there is a lot of overlap of interests, some PCers will want to explore topics with members of other SIGs, SIG Programming Languages (SIGPLAN), Computers and Society (SIGCAS), and Office Automation (SIGOA) to name a few. This is fertile ground for co-sponsored meetings and publications.

SIGPC is a volunteer organization and it does only what its members make it do. It is a relatively new group which has just begun to be active. SIGs, in general, often sponsor activities such as: CONFERENCES and TECHNICAL MEETINGS, PROFESSIONAL DEVELOPMENT SEMINARS, PUBLICATIONS, TECHNICAL COMMITTEES, STANDARDS COMMITTEES.

More on ACM, SIGPC, and the Peninsula Chapter in future issues...

MACHINE LANGUAGE

continued from page 1...

So, if we wanted to be sure the right number of values was in the stack we could compare the first pulled value to 2.

The next PLA pulls the high order byte of the next parameter. This value times 256 is part of the total value of the first parameter. We store it in the highest number location of two consecutive storage positions which will hold the entire value. We do this because many of the instructions access storage positions which are addresses of storage locations and expect the least significant portion is in the low numbered location and the most significant part, the *256 part, is in the higher numbered location. Does that make any sense?

I'll plow on anyway! We continue PLA'ing and STA'ing the values until we have gotten all the parameters out of the stack and saved them in some storage location for later use by our routine. You may well want to use locations 212 & 213 as active locations and when the routine finishes just leave them as the answer going back to BASIC.

I hope this helps nudge you a little further down the M.L. road. In future articles, if I ever get them written, I'll talk about flags, addressing modes, and many of the instructions in the 6502 set. So long for now.

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Questions and Answers, as
usual, on Tues. Aug. 18

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